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ABSTRACT

One of five modules in the curriculum development series of the 16-module series designed to train vocational education curriculum specialists, this module is intended for use in classes or individual study arrangements at the preservice or inservice level by students with varying amounts of experience in vocational education. (These modules are revised versions of earlier study guides--see note.) Introductory materials include an overview, instructions to the learner, detailed list of behavioral goals and objectives, and resources needed to complete learning activities. The module is divided into three sections, each based on one of the goals. The first section describes how individual learners may differ and how these differences relate to learning. In the second section is described the assessment of student needs and interests. The third section looks at ways of providing for individual differences in vocational education programs. Each section follows a standard format: text, individual study activities, discussion questions, and group activities. A summary of the module follows. A concluding activity is provided here. Appendixes include suggested responses to the study activities, a self-check, responses to the self-check, and recommended references. (YLB)

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VOCATIONAL EDUCATION CURRICULUM SPECIALIST

RELATING LEARNING DIFFERENCES AND INSTRUCTIONAL METHODS

Module 10

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
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RELATING LEARNING DIFFERENCES AND INSTRUCTIONAL METHODS

Module 10

Carol B. Kaplan

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Introduction

The purpose of this module is to provide vocational educators with techniques for making vocational curriculum content sensitive to the needs of individual students. Students enrolled in vocational courses vary greatly in age, prior experience, and level of entry into the educational process. Previous studies have found that students frequently are asked to learn things they already know or things they are not yet able to understand. Yet, students learn best when they participate in learning activities appropriate to their educational needs. To meet these needs, some type of individualization of learning is essential in designing and operating vocational education systems.

For vocational educators to guide the learning activities of students adequately, they must first recognize that individual differences exist. Educators need skill in utilizing appropriate techniques for studying and analyzing these differences, and they must be able to provide learning experiences that meet these individual differences.

This module discusses differences in learning style associated with differences in age, educational background, motivation, interests, and aptitude. A companion module in this series discusses vocational education for women, the handicapped, the disadvantaged, and the limited-English-speaking.

Overview

The first part of this module describes how individual learners may differ and how these differences relate to learning. It provides an overview of individual learner differences in physical, mental, social, and emotional characteristics. This section contains a rationale for addressing individual differences in planning and managing vocational education programs, describes variables that account for individual differences, and describes different kinds of training needs that individuals may have at different stages of their careers. To achieve the vocational curriculum's goals and objectives as effectively and efficiently as possible, learning activities must be meshed with the individual student's learning characteristics.

The second goal in this module describes how to assess student needs and interests. Methods of using both unobtrusive measures and formal assessment procedures to determine individuals' interests and abilities are discussed. Included are descriptions of several sources of information: cumulative

records, direct observations, interviews, ratings, conferences, tests, and others. Procedures for determining the educational needs of individuals who are no longer in school settings are also discussed.

The last section of this module looks at ways of providing for individual differences in vocational education programs. Common assumptions associated with group instruction are discussed. Techniques for incorporating students' characteristics and goals into instructional content and methodology are presented for use in both long- and short-range planning. A discussion of specific methods of adjusting teaching strategies to accommodate individual differences completes the module.

Instructions to the Learner

The Self-Check items and possible responses to them are found in the appendices. These questions have two purposes. First, before you begin work on the module, you may use them to check quickly whether you have already learned the information in previous classes or readings. In some instances, with the consent of your instructor, you might decide to skip a whole module or parts of one. The second purpose of the Self-Check is to help you review the content of modules you have studied in order to assess whether you have achieved the module's goals and objectives.

You can also use the list of goals and objectives that follows to determine whether the module content is new to you and requires in-depth study, or whether the module can serve as a brief review before you continue to the next module.

Goals and Objectives

Goal 1: Describe how individual learners may differ and how these differences relate to learning.

Objective 1.1: Provide a rationale for addressing individual differences in planning vocational education curriculum.

Objective 1.2: Describe at least ten variables that account for individual differences.

Objective 1.3: Describe different kinds of training needs that individuals may have at different stages of their careers.

Goal 2: Describe how to assess student needs and interests.

Objective 2.1: Define unobtrusive measures.

Objective 2.2: Describe how to use both unobtrusive measures and formal assessment procedures to determine individuals' interests and abilities.

Objective 2.3: Describe how to determine the vocational education needs of students in a school setting.

Objective 2.4: Describe how to determine the vocational education needs of individuals who are no longer in school settings.

Goal 3: Describe how vocational education programs can provide for individual differences.

Objective 3.1: Discuss four assumptions associated with group instruction.

Objective 3.2: Describe how students' characteristics and goals can affect instructional content and methodology.

Objective 3.3: Discuss at least five techniques for adjusting teaching strategies to accommodate individual differences.

Resources

In order to complete the learning activities in this module, you will need information contained in the following publication:

Krebs, A. H. (Ed.). The individual and his education: Second Yearbook of the American Vocational Association. Washington, D.C.: American Vocational Association, 1972.

GOAL 1: Describe how individual learners may differ and how these differences relate to learning.

Variables That Account for Individual Differences

> Knowledge and understanding of the learner's capabilities, interests, aptitudes, expectations, and limitations are basic to planning in vocational education. The learner is an individual to be served, regardless of age, sex, special needs, prior experience, and level of entry or reentry into the educational process (Lamar, 1978).

The design of a vocational course is influenced by the vocation itself and by the characteristics of the students who show up for training. To identify the most effective method of delivering instruction to a particular student, the curriculum specialist must be sensitive to the physical, intellectual, emotional, and social characteristics that will most affect the student's educational development.

Although there are many differences among students (the focus of this module), it also must be pointed out that students face common developmental tasks. For example, adolescent students--in addition to their academic concerns--are learning to achieve emotional independence from their parents and other adults, to relate to members of the opposite sex, and to define a set of values as a guide to behavior. Adult students, on the other hand, face the tasks of establishing and maintaining a home, finding work, raising children, searching for and finding fulfillment, and--in later years--adjusting to declining physical capabilities. These and other variables that account for individual differences are discussed below.

Age Differences

Students in vocational programs cover a wide range of ages. Secondary programs generally include students from ages 14 through 19. Postsecondary programs include young adults through senior citizens. Older adults make up an increasingly large

segment of students enrolled in postsecondary education. According to the Department of Education, the average age at community colleges is between 29 and 33. This adult student population includes students receiving training for the first time. It also includes career-changers such as highly specialized workers whose jobs have been phased out by technological advances.

There are several ways in which older adult learners differ from younger learners. Older students have different expectations of school, of the instructor, and of themselves. They have different reasons for attending school; most adults attend on a voluntary basis. They have different self-concepts; adults see themselves as mature, goal-oriented, and self-directed. Adult learners have a broader range of life experiences, and they are usually more willing to take risks or chances. (This varies, however. Adults returning to classes after an interval of not being in an academic setting are sometimes initially apprehensive about class participation.)

Chronological age does not always indicate the learner's stage of development and learning readiness. These attributes are influenced by the learner's past experiences and his or her motivation for enrolling in a particular vocational course.

Sex Differences

In the past, various sociocultural, political, economic, and psychological factors fostered the development of widely held beliefs concerning sex differences. These beliefs caused students of different sexes to be treated differently in school. Recent developments in the movement toward equality for males and females have encouraged research to determine which of these beliefs are supported by evidence and which are myths.

Maccoby and Jacklin (1974) found that girls are not more social or suggestible than boys, nor do they have lower self-esteem.

> There are no significant differences between boys and girls in rote learning and simple repetitive tasks, tasks that require higher-level cognitive processing, or the inhibition of previously learned responses. Boys are not more "analytic" than girls. The two sexes learn with equal facility in a wide variety of learning situations. Girls do not lack achievement motivation. There are no differences in adeptness at discriminating speech sounds, interest in visual stimuli, ability to discriminate among them, identification of shapes,

distance perception, and a variety of other measures of visual perception (Wall, 1976, p. 71).

In summary, apparent differences between the sexes in interests, most abilities, and needs are the result of social and cultural influences. These influences are beginning to change as a number of social forces (e.g., effective birth control, inflation, increased awareness of various options for personal fulfillment) have converged and are interacting to support the expansion of women's roles.

What implications do the research findings cited above have for the operation of vocational education courses? Even though the existence of some sex-linked attributes has been established, the categorical exclusion of women and men from various educational programs and subsequent careers is not defensible. Although boys generally excel in visual-spatial ability, many girls also have high-level visual-spatial skills. Therefore, it is important to assess each learner as an individual on the basis of measurable aptitudes and abilities rather than on sex-linked characteristics.

In schools and in business and industry, legislation (Title VII of the Civil Rights Act, Executive Order 11375, and Title IX of the 1972 Education Amendments) requires that girls and women be given equal consideration for admission to all educational programs and for employment in any position for which they qualify. The intent of this legislation is that individuals should be able to enter nontraditional programs and employment. As a result, more females and males are enrolling in vocational education programs for all occupations, regardless of traditional stereotypes.

Differences in Abilities

Individuals differ in such physical abilities as strength, manual dexterity, balance, and endurance. They also differ in their acuity of vision, hearing, smell, taste, and touch. These differences can range from special skills and abilities to partial or complete handicaps. With the current emphasis on mainstreaming and placing students in the least restrictive environment, regular classroom teachers are seeing an increasing number of handicapped students in their classrooms. The table beginning on the next page defines and describes observable characteristics of numerous handicapping conditions.

TYPES OF HANDICAPPED STUDENTS

HANDICAP	OBSERVABLE CHARACTERISTICS
Mentally Retarded	
Educable Mentally Retarded (EMR): Students who have a slower rate of academic achievement than peer age group.	Exhibits - impulsive behavior - immature behavior - immaturity in speech - poor coordination - easy to distract - short memory and attention spans
Trainable Mentally Retarded (TMR): Students who respond more slowly to education and training than the EMR, and whose rate of development is approximately one-half the normal rate.	Displays - lack of self-care skills - poor social adjustment - need for guidance and supervision - inability to be self-sufficient in personal care
Visually Handicapped:	
Students who have no vision, or visual impairments that, even with correction, result in educational handicaps requiring special provisions.	Observable behaviors - avoids close desk work - possesses limited mobility - tilts head - holds book too close - rubs eyes frequently - runs into objects - confuses words - follows oral instructions better than written instructions - blinks and squints eyes frequently

HANDICAP	OBSERVABLE CHARACTERISTICS
Hard-of-Hearing:	
Students with a permanent or varying hearing problem who are not included under the definition of deaf.	May exhibit - difficulty in following oral instructions - too loud or too soft speech - wrong answers to questions or directions - hyperactive behavior - seeming lack of interest in activities (daydreaming or preoccupation)
Deaf:	
Students whose hearing is impaired to the degree that they have problems understanding auditory information with or without a hearing aid or device.	Observable behaviors - cannot follow oral directions - talks too loudly or too softly - gives wrong answers to questions - hyperactive - omits words or sounds when speaking
Deaf-Blind:	
Students who have a combined hearing and sight problem. The student's problems are such that programs designed only for deaf or blind students are not suitable.	May exhibit combined characteristics of deaf and visually handicapped. (See these two categories for characteristics.)
Speech Impaired:	
Students with a speaking problem that causes them to do poorly in school. Included in this category are stuttering and voice or language impairments.	May exhibit - unusually slow or rapid speech - speech that is generally hard to understand - speech that has frequent distortions, omissions, substitutions of sounds - stuttering

HANDICAP	OBSERVABLE CHARACTERISTICS
Orthopedically Impaired:	
Students with a deformity of the body structure that may exist at birth, be caused by disease, or be the result of amputation. Students in this group may have handicaps resulting from loss of limbs or portions of limbs that restricts mobility (includes clubfoot, poliomyelitis, and cerebral palsy). (See "Palsied" below.)	May exhibit following behaviors - depression - resentment - anxiety - dependency - aggression - withdrawal Other observable behaviors - has lack of motor control - complains of intense pain - limps - avoids participation in activities - exhibits discomfort - tires quickly
Palsied:	
Students with a motor disorder appearing before the age of three, which is caused by damage to the brain before, during, or shortly after birth.	Lacks control of voluntary muscles in - arms - legs - tongue - eyes - body movement
Multiple Sclerosis:	
Students with a nervous system disease that results when the insulation (myelin tissue) around the nerve fibers of the brain and spinal cord are destroyed, frequently resulting in mobility impairment.	Exhibits - paralysis of trunk, hands, and/or feet - weakness or loss of control of bladder and bowel - jerky movements of the eyes - dizziness
Muscular Dystrophy:	
Students who have a disease of the nervous system and muscles, which results in a progressive weakening and wasting of the skeletal and voluntary muscles.	Possesses - weakening muscles - lack of muscle control

HANDICAP	OBSERVABLE CHARACTERISTICS
Paralysis:	
Students with a loss of voluntary action caused by - disease - accident - hemorrhage - stroke - tumor - swallowing poison	Observable behaviors - has spasms - exhibits jerking of involuntary muscles - has loss of muscle power and function - reveals emotional problems
Spina Bifida:	
Students with an imperfectly formed central nervous system, due to imperfect development of the spine early in the gestation period.	Observable behaviors - exhibits varying degrees of paralysis - has lack of bowel and bladder control - has lack of sensation in lower extremities
Other Health Impaired:	
Students exhibit limited strength, energy, or alertness due to chronic or severe health problems. This includes heart conditions, tuberculosis, rheumatic fever, diabetes, asthma, sickle cell anemia, hemophilia, and epilepsy.	Exhibits - lack of energy - lack of alertness - inability to progress at normal rate - consistent serious health problems - frequent absenteeism - physical problems such as underweight
Cystic Fibrosis:	
Students with a disorder in which the secretions of certain glands are abnormal.	May experience - complications in breathing - frustration - excessively salty perspiration - heat exhaustion - self-consciousness - chronic cough - small stature - immature appearance

HANDICAP	OBSERVABLE CHARACTERISTICS
Epilepsy:	
Students with improper functioning of brain cells due to temporary buildups of excessive electrical charges in some nerve cells of the brain that cause the brain to lose control (partially or entirely) of the muscles of the body, consciousness, or senses for a period of time. Causes include - brain damage from prenatal or birth injuries - brain damage from accidents - infectious diseases, tumors, or other disorders - unknown causes	May experience - convulsions - seizures (signs of seizures: feeling of numbness; cold or warm; sudden change in color; muscle jerking)
Seriously Emotionally Disturbed:	
Students with an emotional condition occurring over a long period of time and to such a degree that the students do poorly in school. Students who are schizophrenic or autistic are also included in this category.	May display - lack of ability to learn that cannot be explained by other factors - lack of ability to get along with teachers and peers - inappropriate behaviors under normal situations - tendency to show physical signs or fears related to school or personal problems
Specific Learning Disability:	
Students with a psychological learning disorder that causes the student to have problems understanding spoken or written language. This category includes such conditions as brain injury, dyslexia, and aphasia. (See "Aphasia" below.)	May experience - lack of ability to listen or think - problems in speaking - difficulty in reading, writing, spelling, and math - perceptual difficulty - depression

HANDICAP	OBSERVABLE CHARACTERISTICS
Aphasia:	
Students with a language loss in some or all aspects of communication caused by damage incurred in certain portions of the brain.	Observable behavior - may experience difficulty with: talking reading writing understanding - changes feelings, attitudes, and abilities from day to day - seems depressed - withdraws - attention span is limited
Multihandicapped:	
Students with a combination of handicaps such as mentally retarded-blind. Programs designed just for one handicap do not meet the needs of students classified as multihandicapped. This category does not include deaf-blind students.	May exhibit combined characteristics of various handicaps. (Refer to appropriate categories for specific characteristics.)

People are truly handicapped only insofar as they are incapable of meeting the performance demands of the environment in which they are trying to act. The problem comes at the interface of the environment and the handicap. There are three methods of eliminating the mismatch. We will illustrate these by considering the case of a visually impaired student who is unable to read a small dial on a machine tool. One solution is to alter the environment, in this case to make the dial larger or to illuminate it more brightly. A second solution focuses on the individual and the removal of the cataracts that are causing this problem. The third solution is to address the interface. Perhaps the student needs new glasses.

The fields of human factors engineering, rehabilitation engineering, and special education have developed a wealth of methods for enhancing the capabilities of the individual, for altering the demands of the environment, and for giving the

individual aids so that he or she can interact more effectively with the environment.

Differences in Cultural Background

The members of a particular society tend to show certain behavior and attitude patterns that are peculiar to their culture. For example, most Americans speak English, own television sets, and send their children to public schools. A large cultural group, however, usually consists of many subcultures; these may be similar in some respects but may differ greatly in others.

Many subcultures exist within the United States. They result from racial and ethnic groupings, urban-rural differences, socioeconomic differences, regional differences, and differences in lifestyle or values orientation. Customs, morés, traditional attitudes, and practices differ among these subgroups. What might be regarded as desirable by one subgroup might be inconsequential or anathema to another.

Members of a particular culture or subculture will be similar in many respects, but they will also differ from each other; for example, they may have differing abilities, as discussed in the previous section. Rather than regarding cultural differences as a barrier to instruction, teachers can take advantage of such differences in planning learning activities.

Differences in Socioeconomic Level

Individual learners in vocational programs represent all socioeconomic levels. An individual's socioeconomic background can affect his or her needs, attitudes, and expectations. For example, students from a middle class background may have certain expectations about jobs and vocational training that they learned from their parents. They may have a strong work ethic. Students from lower income families may have similar attitudes, but they also may be more skeptical regarding the motivation of the power structure within business. In addition, they may have physiological needs, such as hunger, that interfere with learning.

Differences in Educational Background

Vocational students differ in the amount and quality of previous education and training they have had. Some students will have had learning problems in school; some will have

excelled in all courses; while others will have done average work in most subjects.

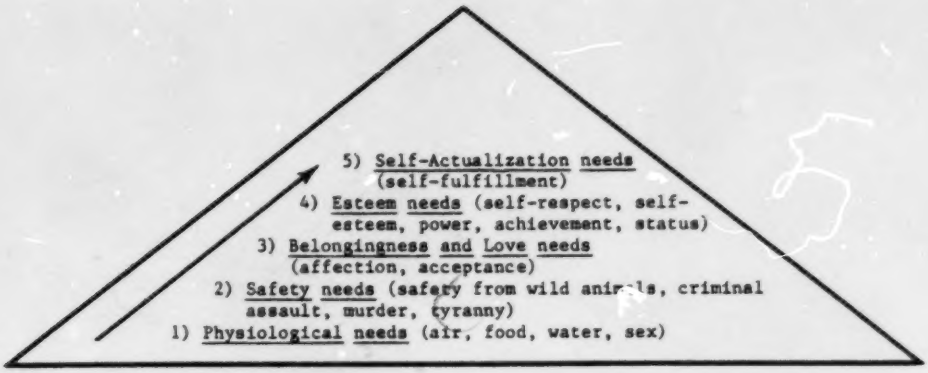
In postsecondary vocational education programs there is likely to be large variation in the educational level of students. Some students may have dropped out of high school before graduation; some may have graduated, while others may have earned a high school equivalency certificate. Some students may have attended community college or junior college, technical schools, apprenticeship programs, four-year colleges, graduate school, military training programs, or training programs in business and industry.

Students' previous education will have a great influence on curriculum design--that is, in determining how long the course needs to be, what examples can be used, what vocabulary will be understood, and what level of abstraction will be meaningful.

Suppose that you are teaching a carpentry course in a Regional Occupational Program. One of your students has had two years of college and has above-average intelligence. Another student is a high school dropout and has below-average intelligence. The latter student knows simple arithmetic operations but cannot calculate rapidly or perform any algebraic operations. This student has a good knowledge of how simple machines work. You can see that these two students would benefit from different types of learning activities. Each of them has certain strengths that will facilitate learning certain aspects of the subject area.

Differences in Needs and Desires

Individuals differ to some extent in their basic needs and desires, although they share many common needs. A hierarchy of human needs has been described by A. H. Maslow (1954). On the next page is a schematic representation of the hierarchy. Individuals generally seek to satisfy lower-level needs (such as physiological ones) before they try to meet their higher-order needs (e.g., esteem, self-actualization). A student who is hungry may have difficulty learning theoretical concepts; a student who is experiencing rejection may have a stronger need for love and acceptance than for success on a paper-and-pencil task.


5) Self-Actualization needs (self-fulfillment)
4) Esteem needs (self-respect, self-esteem, power, achievement, status)
3) Belongingness and Love needs (affection, acceptance)
2) Safety needs (safety from wild animals, criminal assault, murder, tyranny)
1) Physiological needs (air, food, water, sex)

Differences in Motivation

Motivation and needs are closely related. Motivation can be defined as a state of need or desire that activates the individual to do something that will satisfy that need or desire. It is important to realize that motivation is the state of unresolved need or desire within the individual. One person cannot motivate another, although environmental variables can be manipulated to result in an increase or decrease of motivation. In general, the more highly motivated an individual is to learn, the greater the amount of learning that will occur.

If you are currently involved in a teaching situation, think about the individual students in your class. Which of them are generally eager to learn the occupation for which they are receiving training? For which of them is motivation something of a problem? The less motivated a student is, the more you will have to manipulate environmental variables to keep him or her interested. Of course, students can be motivated to learn for different reasons. For example, in an auto mechanics class, one student may be motivated because she hopes to be employed as a mechanic, while another student may be enrolled because he wants to be able to maintain his own car.

Individuals also differ in such personality factors as perseverance, curiosity, self-confidence, level of aspiration, and aggressiveness. These factors are very similar to motivation in their effect on learning.

Differences in Attitudes and Beliefs

An attitude is the tendency to respond favorably or unfavorably toward a person, object, or situation. A belief is the acceptance of some statement or proposition. Individuals base their attitudes and beliefs on what they regard as facts. People do not necessarily behave according to the facts as others see them; rather, they behave in terms of what seems to be true to them. Beliefs and attitudes can enhance or impede instruction. People develop favorable attitudes toward things that appear able to help them progress toward a goal, while they develop negative attitudes toward anyone or anything that gets in the way.

Awareness of the convictions and biases of individual students may influence the kind of examples you can effectively use; this information may also provide clues to student motivation. Students without a broad base of experience may be suspicious of people unlike themselves. Especially at the secondary level, some students may dislike everything about school or an academic environment. You may find pervasive race and/or nationality prejudices among some students. While these prejudices are not to be condoned, their presence must be acknowledged in order to work effectively with individual students.

Differences in Interests

The areas in which there may be the greatest variation among individuals is in their interests. A current topic of concern for educators is the degree to which student interests should determine what is planned and taught. It stands to reason, however, that focusing learning activities on the kinds of things a student is interested in will help keep that student motivated. Interests are usually limited to special skills or aptitudes. For example, a student with good manual dexterity will probably like doing work that requires fine hand coordination and may be interested in fixing cars. Some students may be interested in working outdoors most of the time, while others will prefer indoor settings.

Differences in Aptitudes

An aptitude is an existing potential that, with practice and training, may result in good or superior performance in the future. Aptitudes can be identified by demonstrated performance or by standardized aptitude tests. Vocational educators should be able to recognize aptitudes and to facilitate their development through prescribed learning activities.

Differences in Self-Concept

What individuals do and how they behave are determined by the picture or concept they have of themselves. In other words, an individual's self-concept influences actions because the person will strive to maintain consistency in his or her behavior. For example, a person who is repeatedly told that he or she is bad, stupid, or a failure may begin to act in such a fashion.

Differences in Vocational Maturity

Individuals differ in the knowledge they have about vocations and in the amount of planning and preparation they do for their vocational choice. Vocational programs must be adjusted to the individual student's vocational maturity.

Differences in Learning Style

Individuals differ in the way they approach and complete learning tasks. Tanner and Lindgren (1971) describe four distinct learning styles:

- Rigid-inhibited style. This type of learner observes rules rigidly and needs constant supervision.
- Undisciplined style. Individuals in this category refuse to do what is asked of them and lack a tolerance for frustration.
- Acceptance-anxious style. These students have an intense desire for approval and worry excessively about being wrong.
- Creative style. This type of learner shows self-confidence, objectively evaluates his or her own performance, and performs well on a variety of tasks.

Listed below are other learning style differences typically found in classroom situations:

- Some students prefer to work alone, while others like to work in groups.
- Some students are competitive, while others fear any competition.

- Some students prefer visual inputs, while others prefer an auditory mode.

- Some students answer and solve problems impulsively; others are more reflective.

- Some students show concern for detail, while others prefer to deal with generalities.

Training Needs Required at Different Career Stages

Most individuals have different kinds of training needs at different stages of their careers. They may require career awareness/orientation, exploration, preparation, retraining, updating, or upgrading. The public places different values upon satisfying each of these needs, and those values fluctuate according to the current economic situation. For example, in times of high adult unemployment, the greatest value is likely to be placed on satisfying retraining and upgrading needs; in times of high unemployment among teenage youth, more emphasis would probably occur in exploration and preparatory activities.

Individual Study Activities

After reading this section of the module and pp. 106-118 in Krebs, A. H. (Ed.). The individual and his education: Second yearbook of the American Vocational Association. Washington, D.C.: American Vocational Association, 1972, complete the following activities:

1. Identify at least three reasons why knowledge of individual characteristics is useful to educators.

2. Use the table that follows to consider ways in which you are similar to and different from others you know. What are some of the effects that these similarities and differences have had on your relationships?

Other Person	Ways in Which The Two of You Are Similar	Ways in Which The Two of You Are Different
Parent		
Spouse		
Friend		
Former student or someone else you have supervised		
Boss or other authority figure		

3. The table below lists ways in which individuals differ. Complete the table by reading the information provided and filling in the missing information in the Difference, Example, and Implications for Education columns.

WAYS INDIVIDUALS DIFFER

Difference	Example	Implications for Education
a.	X is interested in playing basketball; Y prefers reading.	
b.	X is tall for her age; Y is unusually short.	
c. Learning Style		Provide individual carrels, areas for small-group work, programmed instruction, frequent group discussions.
d.	X never graduated from high school; Y has a master's degree.	
e. Cultural Background	X is a Native American raised on a reservation; Y is a Vietnamese refugee from a small village.	
f.		Call on X frequently in class; allow private time for Y's responses whenever possible.
g. Social Development		
h.		Provide tutorial help for X; consider using Y as the tutor.
i. Family Background		
j.		Suggest that X complete a work experience in a city government office; encourage Y to look into an opening on the school newspaper staff.

4. List at least five ways that adult learners and younger learners can differ.

Discussion Questions

1. In addition to academic concerns, what are some other developmental tasks of adolescents? What are some developmental tasks of adults? What implications do these tasks have for curriculum development?

2. What experiences have you had with adult learners? From your experience, contrast learning styles of adults and teenagers. What implications, if any, do differences in student ages have for vocational education programs?

3. What changes in vocational education, if any, have you noticed as a result of the women's liberation movement and of legislation prohibiting sex discrimination? What problems have you seen? Can you suggest ways to correct these problems in the future? What adjustments must still be made in present vocational education programs to accommodate these changes?

4. What various strategies do individuals have for coping with stress or pressure? What are some techniques based on learning psychology that will help relieve stress or pressure?

5. What different cultural groups are represented in your community? in this class? What traditions or customs are associated with these various groups? How can these differences be utilized in vocational education programs?

6. The text provided some examples of how an individual's socioeconomic background can affect his or her needs, attitudes, and expectations. What are some other differences that might occur as a result of family income?

7. What is the role of vocational education in the increasing occurrence of mid-career changes?

8. How can teachers manipulate environmental variables to increase student motivation?

9. Why are beliefs and attitudes so difficult to change? Have you been involved in a classroom situation in which you were successful in changing some of your students' attitudes?

10. How much should curriculum offerings be based on student interests? Should vocational education programs be offered in subjects for which there are no job placements available?

11. What factors can contribute to a positive self-concept? to a negative self-concept?

12. How would you describe your own learning style? What effects do differences in learning style have on vocational programs?

Group Activities

1. Ask the class to form into pairs. For 5 to 10 minutes have members of each pair interview each other and list as many ways as they can in which they are similar and different. Ask several pairs to share their lists with the group and to discuss the results.

2. Divide the class into two to four groups, preferably into all-male and all-female groups. Give each group two large pieces of newsprint. On the first sheet have them list at least three stereotypes they have heard about males and three stereotypes about females. Have the groups tape their lists to the wall and spend a few minutes viewing and discussing the results. On the second sheet, have them list several ways in which vocational education could improve opportunities for both males and females. Post and discuss these results.

3. Divide the class into small groups, preferably according to field of specialization. Ask members of each group to list briefly the interests, aptitudes, and abilities that are desirable for a worker in their particular field. Have the group members share and discuss their lists. Note any similarities and differences that arise and discuss the implications they have for vocational education.

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GOAL 2: Describe how to assess student needs and interests.

Determination of Students' Interests and Abilities

Vocational teachers typically use a combination of methods to obtain information about individuals' interests and abilities. Several of these approaches are discussed below.

Unobtrusive Measures

It is important to assess the cost-effectiveness of a data collection method by weighing the time, effort, and expense involved in collecting information against the usefulness of the information gained. A great help in solving the problem of how to collect the information you need while minimizing the time, effort, and expense involved is the use of unobtrusive measures.

Be sure to take advantage of information that already exists. Suppose you want to know which vocational classes are preferred by a student. You could ask the student to rate each class, but this might not be as accurate as checking the student's attendance patterns.

Suppose you want to determine the degree of motivation of a student in a class. Rather than asking the student to rate his or her level of motivation, you could assess such indicators as:

- amount of otherwise free time spent working on activities related to class;
- amount of voluntary work performed, over and above the minimum amount assigned; or
- evidence of enthusiasm or a lack of it (e.g., loss of materials; on-time completion of assignments; tardiness; peer group involvement; overt resistance).

Using available information saves time and increases accuracy. Especially when assessing students' attitudes, the use of

unobtrusive measures is preferable to self-report items. Asking students to rate their likes, dislikes, values, or intentions opens the door for intentional bias, distortion, or reactivity (i.e., the effect of measuring upon the behavior being measured). If self-report items are used to assess student attitudes, the results should be corroborated by unobtrusive indicators.

Cumulative records. Most schools keep student records, which follow the students as they transfer from school to school. A student's record may include such items as family background; schools attended; courses taken; grades; anecdotal notations by past teachers and other professionals or paraprofessionals with whom the student has had contact; attendance; activities; standardized achievement, interest, and aptitude test scores; and employment.

The student's school health record, which is usually separate, includes the student's medical history. Information in cumulative records can help teachers to know their students, set standards, and understand why particular students are having difficulties.

There are, however, some arguments against permitting teachers to have access to cumulative records. Teachers may prejudice themselves unnecessarily when they study records and test results. In addition, knowledge of test results and IQ scores may cause teachers to set standards for students that are unrealistically high or low.

Formal Assessment Procedures

Direct observations. Teachers are constantly observing their students, either as individuals or as parts of groups. Observing individuals in a variety of situations, both in class and out, can provide the teacher with a great deal of information. Studying and analyzing a student's written work is another rich source of information. In order to have value for planning instruction, teacher observations should be recorded and made a part of the student's record.

Interviews/conferences. Interviews can be held with the learner or with people who have knowledge about the learner, such as parents, other teachers, and employers. Through a series of questions, the interviewer gathers information; the amount and accuracy of the information obtained are determined in large part by the rapport that is established between the interviewer and the persons being questioned. Interviews can involve two

people or--in some cases--small groups. The latter situation is typically called a conference.

Ratings/checklists. A rating is a structured evaluation in which the rater assesses an individual on various attributes using pre-defined categories. Learners can rate themselves or be rated by teachers, peers, employers, and others; they can be rated in such areas as cooperation, dependability, and skill level.

Tests/assessments. This is one of the most formal methods of observing individual differences. Tests can be performance-based, oral, or paper-and-pencil; essay or objective; timed or untimed; measures of ability, achievement, skills, aptitude, or interest; given prior to, during, after, or instead of instruction.

Questionnaires. These are written survey forms containing numerous questions and/or incomplete statements. They may be expanded to produce autobiographies that are in-depth, self-reported life histories. Sociometric devices are questionnaires that produce diagrams of social interactions within groups.

Case studies. This approach entails an in-depth exploration of an individual and may use many of the above methods. The result is usually a summary called a "case history." At a case conference, a single individual is discussed and analyzed by a team of specialists, such as social workers, teachers, or physicians. Closely related to the case study method is the development of Individualized Education Programs. These programs are discussed in more detail in the module in this series that deals with vocational education for students with special needs.

Determining the Vocational Education Needs of Individuals Who Are No Longer in School Settings

Persons responsible for planning vocational education programs must also keep in mind the vocational education needs of people who are no longer in the public schools, especially since adults make up an increasingly larger segment of students enrolling for vocational training. Minnesota and Oklahoma are two states that have attempted to assess the need for vocational education of people 18 years or older. The Minnesota Research Coordinating Unit used census tracts as the basis for a mail-out

survey to households, while Oklahoma utilized a telephone survey to get similar information. Listed below are the types of items used in these surveys:

Job-related questions.

- Respondents' job title, whether they are employed full or part time, how long they have worked at their job, whether they will be looking for another job in the near future.
- If respondents are not working, how long they have been looking for a job, whether they have had help in looking, and--if so--who provided help.
- If respondents are not working or looking for work, what they are doing.

Training-related questions.

- Whether respondents would like to have more job or employment-related training and--if yes--reasons for desiring such training and the jobs for which they would want to be trained.
- The best day and time for employment-related training, and any serious problems that would prevent respondents from attending an educational program.
- Respondents' educational background, hobbies, amount of leisure time desired, and how this leisure time would be used.
- Respondents' sex, year of birth, grade level completed.

Gathering this type of information should assist in planning vocational education programs that are responsive to adults' needs.

Program Areas Affected by Student Assessment

Planning instruction. The most important reason for collecting information about learners is to plan more effective learning activities. It is a rather common practice to survey secondary students to determine which vocational programs they would be interested in taking. However, it is not so common to give students, prior to their making a selection, information about the jobs for which they might receive training. Students who receive such information as the manpower supply and demand

for an occupation, beginning salary, and possibility for upward mobility will be able to make more informed choices.

Identifying potential learning problems. Studying learners enables the educator to identify problems before they become too large. By identifying a problem early, it can be corrected, or--if necessary--appropriate professional help can be obtained.

Showing your personal interest in the learner. By seeking out information about individuals, the educator demonstrates personal interest in them. The effects of this attention, if given in a positive way, can be as beneficial as use of the actual information obtained.

Learning about yourself. The three items above indicate ways in which students will benefit from having an educational program tailored to their needs. However, instructors who take the time and effort to learn about their students will also receive some benefits. Such study can reveal instructor biases, strengths, weaknesses, and new interest areas.

Individual Study Activities

After reading this section of the module and pp. 115-117 in Krebs, A. H. (Ed.). The individual and his education: Second yearbook of the American Vocational Association. Washington, D.C.: American Vocational Association, 1972, complete the following activities.

1. Select five methods of gathering information about individuals and state what you feel is one advantage and one disadvantage of each.

2. Indicate the types of information about a learner you might be able to obtain from the following sources:

   - Books/articles/films
   - Learners themselves
   - Teachers/counselors
   - Parents/family members
   - Other students
   - Learner's employer
   - Cumulative files

3. What methods would you use to obtain the following information about an individual?

   - Height
   - Typing speed
   - Past grades
   - Relationships with other students in class
   - Writing ability
   - Grasp of theoretical knowledge of a course
   - Parents' desire for learner's career
   - Opinion of you or your class

Discussion Questions

1. What are some advantages of reviewing cumulative records? What are some disadvantages?

2. What are some advantages of using an interview to gather information about an individual? What are some disadvantages?

3. What are some advantages of using ratings? What are some disadvantages?

4. What are some advantages of using tests to determine an individual's needs and interests? What are some disadvantages?

Group Activity

1. Choose two teams of three students each to debate the following issue:

   "Should teachers be allowed to see students' cumulative records?"

   Limit each group to five minutes for an opening statement and five minutes for rebuttals. Discuss the presentations. Bring up the question of whether students, parents, and employers should have access to student records.

GOAL 3: Describe how vocational education programs can provide for individual differences.

Strategies for Addressing Individual Differences

While most teachers have been exposed to the theory of individual differences, many teachers feel insecure when called upon to translate this theory into practice. Such factors as class size, lack of practical experience, and lack of suitable materials can contribute to a teacher's inability to meet the individual needs of students. Consequently, individual differences are typically viewed as problems to be overcome rather than as challenges to be taken advantage of.

Despite this problem, some vocational educators are using a number of approaches for dealing with individual student needs. Before discussing these, let's explore why group teaching remains a predominant teaching mode.

Assumptions Regarding Group Instruction

In an article entitled "Teaching Strategies for Individual Learning," Gordon Law discusses four rationales commonly cited for offering group instruction.

- Students have common levels of educational skill and backgrounds.
- Students can learn adequately from a common curriculum.
- Group instruction is more economical than individual instruction.
- Expensive education media are necessary to provide individualized instruction (Krebs, 1972).

From the text and learning activities associated with this module, we know that the first two assumptions are false: students typically vary in their educational backgrounds, and student differences in age, interests, and learning style mean that a common curriculum will not foster optimal learning. The third

assumption may seem true. However, when we consider that individualized instruction allows students to learn more quickly and efficiently because they do not have to "relearn" what they already know, that assumption can also be discarded. The fourth assumption is misleading. While individualized instruction can include audio-visual equipment, computer terminals, and teaching machines, these items certainly are not essential. What is necessary is to match learning activities with the students' needs and interests.

Adjusting Teaching Strategies to Accommodate Individual Differences

The accountability and evaluation requirements set forth under current legislation suggest that instructional content and methodology should be adjusted to each student's characteristics and goals. In fact, the development of individual educational programs is currently mandatory for handicapped students under 21 years of age.

The movement of vocational education into individualized instruction was also foreseen by youth employment legislation introduced in June 1979. This legislation proposed the creation of a youth employment division within the U.S. Employment Service. Employment Service staff, along with prime sponsors from the Comprehensive Employment and Training Act (CETA) program, schools, and other agencies, were required by this legislation to prepare jointly an employability development plan for each youth seeking employment and training services under CETA.

The most effective teaching strategies match instructional content and methodology with student characteristics and goals. For long-range planning, educators will want to assess the individual's interests and abilities and match these with the knowledge, attitudes, and skills required in a potential occupation. For short-range planning, educators will assess the student's current status in an area and set a learning goal--this will determine instructional content. Learning activities will then be based on the individual's interests and learning style. Some specific educational approaches used to match instructional content and methodologies with student characteristics are described below.

Selective enrollment. Sometimes students are screened before being enrolled in a vocational program. Those who do not meet specified criteria are not permitted to enroll; rather, these students are guided into programs for which they can qualify.

Homogeneous grouping. Students are often grouped according to characteristics they have in common: intellectual ability, previous training and experience, interests, physical disabilities, manipulative abilities, or age. As with selective enrollment, homogeneous grouping attempts to capitalize on the differences among learners--rather than ignoring them--by using them as indicators for determining the setting most conducive to learning.

Informal variations in teaching methods. This method is used almost intuitively by nearly all teachers. For example, a teacher may provide immediate help for one learner but may let another struggle to solve a problem alone; this action is a recognition of different learning styles. Another example is allowing options for term projects in an effort to consider individual needs and interests.

Remedial instruction. Through tutoring, special remedial classes, and self-instructional materials, individuals are helped with problems in learning.

Team approaches. Teams can be built around student abilities. For example, skilled readers can be paired with non-readers. "Mass production" activities can be planned, with student abilities determining the role they are assigned (e.g., engineer, timekeeper, quality control inspector, factory hand). As with several other methods, this approach attempts to capitalize on the differences among learners. Instructors with complementary strengths and weaknesses may wish to team teach classes.

Self-instructional materials. Through such devices as programmed books, teaching machines, and computers, individuals are allowed to learn at their own pace. These approaches are attempts to meet differences in learning style as well as differences in time requirements for learning.

The chart that follows relates several recommended instructional techniques to the learning characteristics of various types of special needs students.

INSTRUCTIONAL TECHNIQUES FOR SPECIAL NEEDS STUDENTS

CHARACTERISTICS	TECHNIQUES
Limited reading and writing ability	- Limit use of written material - Utilize visuals and audiovisual information - Practice brief reading exercises - Simplify vocabulary - Select materials with appropriate reading level - Label tools and equipment - Pair or group students - Show relevance of reading to vocational and life success
Low level of aspiration	- Provide experiences that promote feeling of self-worth - Supply role models with whom students can identify - Explore a wide variety of feasible career options - Practice value-clarification and goal-setting - Utilize role play and work simulation strategies - Develop community contacts
Short attention span	- Provide short periods of work - Vary experiences to include some active and some concentrated work - Utilize motivational techniques - Supply tasks at students' level to maintain interest - Provide materials that are interesting and relevant - Use short, frequent repetitions - Encourage active participation
Deals better with real and concrete rather than abstract ideas	- Base instruction on experience when possible - Work from concrete to abstract - Provide opportunity to practice and repeat in a variety of ways

CHARACTERISTICS	TECHNIQUES
	- Utilize real experiences related to class instruction - Clarify relationships during instruction
Learns best by doing	- Plans "hands-on" experiences as much as possible - Encourage active participation - Practice "overlearning" or continue practice past initial mastery of task - Stress accuracy rather than speed - Provide opportunities to practice and repeat - Progress one step at a time with tasks - Use community resources to increase relevance of teachings
Has limited self-direction; needs structure and order	- Be firm, consistent, and clear - Provide an atmosphere of low tension and stress - Give clear, simple instructions - Repeat directions and information frequently - Utilize direction with simple pictorial or descriptive steps - Be positive and direct - Limit number of rules to basic necessities - Develop rules cooperatively - Encourage self-confidence
Motivated more by outside forces than internal ones	- Reinforce desirable behaviors - Use a gradually declining system of rewards - Work from tangible toward nontangible rewards - Utilize motivational techniques - Encourage self-confidence and self-direction - Expect ups and downs in student achievement

CHARACTERISTICS	TECHNIQUES
Has poor self-concept and fear of failure	- Design instruction that allows students to experience frequent success - Use small, progressive steps that show accomplishment - Point out and utilize students' strengths - Encourage student participation in class, school, community, and youth organization activities - Reinforce desirable behavior - Expect students to do well - Involve all students as much as possible - Encourage improvement in grooming and social skills - Be consistent and fair with students
Depends on one sense more than others	- Utilize materials that appeal to as many senses as possible - Determine the sensory mode through which the student learns best - Develop experiences that require students to use a variety of senses - Build toward increased tolerance of self and others - Investigate for physical causes of dependency on one sense
Displays antisocial behavior	- Keep records of behavior and analyze periodically - Use skills of counselors and resource persons in dealing with antisocial behavior - Consult with other teachers, resource persons for assistance in dealing with atypical behavior - Teach socially acceptable behavior - Check for physical causes of unacceptable behavior - Use role plays and simulations to depict acceptable behavior - Provide acceptable energy outlets - Expect some ups and downs in behavior

CHARACTERISTICS	TECHNIQUES
Lack of ability to combine body movements harmoniously	- Tape papers to the table to prevent the student from dropping them on the floor - Laminate papers before you give them to students. The papers will be easier to handle, can be wiped clean, can be written on, can be dried without damage, and can be used again - Place magnetized pieces on a metal board when using games
Older adults	- Materials, methodologies, and objectives must be realistic and immediately applicable to the world of work - Formal, grade-based evaluations are less important to adults than are competency-based evaluations - Adult students can and should participate in planning their own training (they usually know their particular needs and objectives!)

Individual Study Activities

After reading this section of the module and pp. 163-174 in Krebs, A. H. (Ed.). The individual and his education: Second yearbook of the American Vocational Association. Washington, D.C.: American Vocational Association, 1972, complete the following activities.

1. Assume you are the new vocational education department chairperson for your school. As you anticipate the coming school year, what are some of the potential difficulties that your vocational teachers may face as they try to address the individual differences of their students? What difficulties might you have with the individual differences among your teachers?

2. List several ways that individual differences among learners are handled by the schools in academic subjects and in vocational subjects. In your opinion, how successful are these attempts?

3. You have a class of 28 students in vocational horticulture. Describe a plan of organization to provide for the following individual differences: five of the students are non-English-speaking and are enrolled in an English as a Second Language class; three students are physically handicapped but are of normal intelligence.

Group Activity

1. In groups of three or four, discuss the following topics:

   a. How have we treated individual differences in this course?

   b. Do self-instructional modules meet our needs as students?

   c. How could this course be more tailored to individual needs?

Summary

In this module, you learned about the importance of individual learner differences. The interplay of students' physical, mental, social, and emotional characteristics with program content and instructional methodology must be considered when planning and managing vocational education programs. In addition to physical and personal differences that students carry with them throughout their lives, vocational educators must be aware that individuals have different kinds of training needs at different stages of their careers.

You also learned about assessing student needs and interests. Both unobtrusive measures and formal assessment procedures can be used to collect information about individual learners.

Finally, you learned about ways of providing for individual differences in vocational education programs. In order to create the optimal learning conditions and to satisfy mandated accountability and evaluation requirements, an individualized approach is necessary.

The activities in the module have helped you to review the basic material in each goal as well as to relate your own experiences in accommodating individual learner differences through the instructional process.

Concluding Activity

Observe a student's performance in a vocational education class for at least a week. Try to note the student's vocational skills, relationships with others, obvious interests and attitudes, and other factors that seem important to you. Note how the class's content or instructional methodology has been modified to accommodate these student characteristics. Analyze the results in a short paper.

APPENDICES

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Study Activity Responses

The answers that follow will give you an idea of the type of responses expected. Use them as a study tool if you wish.

GOAL 1

Individual Study Activity Responses

1. Knowledge of individual characteristics is useful because it:

   - makes vocational curriculum content relevant and sensitive to individual needs;
   - increases the effectiveness of vocational education programs in serving the learner, regardless of age, sex, special needs, prior experience, and level of entry or reentry into the educational process; and
   - helps vocational programs meet the accountability requirement of preparing students for job entry and teaching them the skills they need to succeed on the job.

2.

Other Person	Ways in Which The Two of You Are Similar	The Two of You Are Different
Parent	Both are Democrats. Both like to play tennis. Both are tall. Both are "spenders" rather than "savers."	I smoke; he doesn't. I went to college; he quit after 8th grade. He loves fishing; I hate it.
Spouse	Both love kids. Both are light sleepers. Both are Mexican-American. Both are very active.	She loves Los Angeles; I prefer New York. She likes to save money; I prefer to spend. She wants a career; I want her to stay home.

3.

WAYS INDIVIDUALS DIFFER

	Difference	Example	Implications for Education
a.	Interests		Include a variety of activities; let activities related to students' interest be "rewards" for good work, etc.
b.	Physical size		Avoid teasing either; let each have a choice to excel in his or her own area.
c.		X learns best by reading alone; Y prefers to discuss ideas with others; Z learns best through lectures.	
d.	Educational background		May or may not have implications for vocational education if reading ability is sufficient; individualize learning as much as possible to accommodate interests and experiences.
e.			Try to let each share experiences with class through oral presentations, craft demonstrations, etc.
f.	Ability/ personality	X usually knows the answers and loves to be recognized; Y becomes very embarrassed when speaking and even stays home to avoid it.	
g.		X has no idea what to talk about in an interview and is shy about meeting strangers; Y has been through several interviews.	Role-play several interviews in which X and Y have chances to be both applicant and interviewer; practice "small talk" in addition to formal answers.
h.	Social development/ personality	X is a new, slow student who is shy; Y is an above-average "old-timer."	
i.		X comes from a well-to-do family; Y is from a low-income family.	Probably no implications for education unless learning abilities are obviously different. If Y's situation is extreme (e.g., if Y suffers from poor nutrition), you may assist by alerting appropriate helping sources.
j.	Interests/ aptitudes	X is thinking of a career in politics; Y seems to lean toward journalism.	

4. Listed below are attributes more frequently associated with adult learners than with younger learners.

- Voluntary attendance
- Competing responsibilities
- Different expectations of school
- Different self-concepts
- Heterogeneity of age, background, goals
- Broad bases of experience
- More rigid habits
- Need for immediate application of learning
- Problem-centered approach to learning
- Different physical abilities
- Different emotional needs

Discussion Question Responses

1. You might mention that adolescents are concerned with preparing for marriage or coping with serious romantic relationships, gaining economic independence, adjusting to bodily changes, and evaluating their own potential in relation to career decision making. Adults are concerned with progressing in a career, using leisure time in a satisfying way, adjusting to second careers or to new technologies that make original careers obsolete, and preparing for retirement.

   It is difficult to teach material not related to students' current developmental tasks. Curriculum should provide for discussions or role playing of ways to cope with these problems.

2. You might mention that differences in student ages imply potential problems with cross-age tutoring and a need to help older learners avoid embarrassment due to unfamiliar situations. Again, it is necessary to relate the curriculum to students' developmental tasks.

3. The stereotypes of occupations for men versus women are gradually disappearing; however, vocational educators at state, district, and local levels feel that community attitudes and values still present a major constraint to sex equity in vocational education. The most serious problems stem from pervasive stereotyping, conservative attitudes, and traditionalism. Parental attitudes and influences are a second source of resistance. Building-level staff frequently see student attitudes as a constraint to achieving sex equity. Finally, vocational educators feel that the movement toward equity is inhibited more by employer attitudes than by a lack of job openings or discrimination once nontraditional workers are on the job.

4. Individuals sometimes cope with stress or pressure by withdrawing from the situation, by crying, or by exhibiting disruption; physical problems sometimes erupt as symptoms of stress. Alcohol and drug abuse are other strategies that are sometimes used. More adaptive ways of releasing tension are physical exercise and the verbal expression of feelings. Learning psychology encourages stress-relieving techniques such as physical exercise and talking about one's feelings with others in similar situations.

5. Some ways in which cultural differences can be utilized in vocational education programs are encouraging individuals to share cultural attitudes toward work, visiting rural and urban areas, and having exhibits of handicrafts.

6. Some individual differences that may occur as a result of family income are that parents may push a child to go to college and to enter a certain profession; a father may be able to help his son or daughter get into an apprenticeship program; and a student may not be motivated to work if his or her parents have not worked on a regular basis.

7. To address the increasing frequency of mid-career changes, vocational education should teach people how to change careers and where to go for counseling and retraining.

8. Teachers can increase student motivation by providing external rewards such as praise, points, and prizes; by including students in program planning and evaluation; and by providing learners with greater responsibility.

9. Beliefs and attitudes are difficult to change because they are associated with pleasant or unpleasant memories. It is easier to keep an attitude rather than to undergo an

attitude change, which requires learning new responses to certain situations. Also, it is usually rewarding to keep old attitudes, since most people in one's social network will have similar attitudes.

10. A curriculum should be based on student interests insofar as those interests can be satisfied in a way that is consistent with the educational goals of the instructional program. Since a major goal of vocational education is job placement, there should be no vocational education offerings in subjects for which there are no job placements available. This criterion should be regarded in a broad rather than in a narrow sense. For example, a member of a minority group that has been denied entry into an occupation because of prejudice should still be provided training for that occupation--if he or she so desires--since discrimination in employment is prohibited by law.

11. A supportive home environment, successes in school and at work, and friends are all factors that can contribute to a positive self-concept. On the other hand, repeated failures, critical parents and siblings, physical problems, and learning difficulties contribute to a negative self-concept.

12. Differences in learning style indicate a need to individualize instruction and to do more research on ways of accommodating different learning styles.

Group Activity Responses

1. Following are examples of attributes that may result from the paired interviews. Similarities: both are married females, majored in the same subject in college, and have one child; differences: one is blonde while the other is brunette; one is Italian, the other French; one is from California, the other from New York.

2. These are examples of male and female stereotypes that may emerge: Males: should not cry, are the providers, like sports, are aggressive, prefer passive women; females: belong in the home, want to have children, are the weaker sex, prefer dominant men, aren't good with money.

   Vocational education could improve opportunities for both males and females by encouraging members of both sexes to enroll in all courses, using both sexes in publicity photographs, having rap groups to discuss sex stereotyping, promoting inservice programs to increase teacher awareness, and asking men and women in nontraditional roles to speak at class sessions.

3. Following are examples of interests, aptitudes, and abilities that may be desirable for a worker in two fields of specialization:

   - Business: good with numbers, likes details, is neat, good under pressure
   - Health occupations: likes people, is not disturbed by physical injury, willing to work varied hours

GOAL 2

Individual Study Activity Responses

1. Methods of Gathering Information

Method	Advantage	Disadvantage
Books, articles, films	Provide up-to-date information	Many are produced to "sell"; they may be too general to enlighten you about your students
Cumulative records	Provide otherwise unknown information	May prejudice the reader; may contain errors
Interviews/ conferences	Allow face-to-face contact; can clarify misunderstandings	Are time-consuming and difficult to arrange
Ratings/ checklists	Can be done in a short time	Can be ambiguous; the rater's general impression of the person or item being rated can skew his or her response pattern
Tests	Provide much information in a short time	Can discourage the student; there is concern about cultural bias of tests

2. Listed below are various types of information that can be obtained from each source:

- Books/articles/films: general background information on all types of differences
- Learners themselves: interests, experience, personality, learning style, background
- Teachers/counselors: abilities, interests, self-concept, vocational maturity
- Parents/family members: family background, expectations for the learner
- Other students: social relationships, experience
- Learner's employer: vocational skills, social skills on the job, vocational maturity, various abilities
- Cumulative files: academic ability, family background, educational background.

3. Methods Used for Particular Information

Information	Method(s) You Would Use
Height	Observation (measure directly), ask learner (questionnaire or interview)
Typing speed	Test
Past grades	Cumulative file
Relationships with other students in class	Observation, sociometric measures
Writing ability	Observation
Grasp of theoretical knowledge of a course	Test (oral, written)
Parents' desire for learner's career	Interview, questionnaire
Opinion of you or your class	Interview, questionnaire

Discussion Question Responses

1. The advantages of reviewing cumulative records are that--provided the information is accurate and is interpreted correctly--the file can provide a wide variety of background information; since this is a permanent record, students may be motivated to perform well in order to have a commendable record; when files are "open," parents and students can be certain to include pertinent details regarding certain situations. Some of the disadvantages of reviewing cumulative records are that the recorded information may be incorrect; scores may be misinterpreted; records can bias some teachers; students may be unfairly categorized on the basis of a single "official" comment; files should not be "closed," as this violates the students' and parents' right to review information used in making decisions about the student.

2. Some advantages of the interview are that people are usually able and eager to talk to a willing listener; the interview can quickly produce a large quantity of useful information; it allows for face-to-face contact in which the concerns of each party can be covered; both parties have a chance to respond, to ask questions, and to clarify unclear points. Some disadvantages are that inexperienced interviewers may be too formal, may place the interviewee on the defensive, or may probe sensitive areas too soon; comprehensive interviews take considerable time both to conduct and to analyze.

3. Some of the advantages of using ratings are that they can provide objective information about an individual by which he or she can be compared to others or to his or her previous performance; since they are structured, ratings or checklists can be ambiguous; unless rating scales are definitely outlined and raters are trained, judgments will vary; a "halo effect" can obscure the pattern of traits within an individual--i.e., the observer's general opinion about the individual can influence ratings on specific traits.

4. Some advantages of using tests to determine an individual's needs and interests are that they provide a variety of information in a relatively short time; they enable teachers to assess their own instruction; they enable learners to assess their strengths, progress, and standing; and they permit a wide sampling of subject matter. Some disadvantages are that many learners fear or dislike tests and do not give a true sample of their competencies; tests are often misinterpreted and misused; and poor tests can discourage or antagonize students.

Group Activity Responses

1. Following are examples of positive and negative statements regarding whether students, parents, and employers should have access to student records.

   Pro: Reviewing student records helps in planning, acquaints the teacher with potential problems, helps the teacher know more about quiet students.

   Con: Reviewing student records may be an invasion of student privacy; the records may contain errors that prejudice the reader; people should be judged on their present performance rather than on past performance.

GOAL 3

Individual Study Activity Responses

1. Potential difficulties in meeting needs of students might include the following:

   - Lack of training in awareness of individual differences
   - Lack of training in individualizing instruction
   - Large classes make it difficult to provide needed individual help to all students without aide(s)
   - Low budget restricts amount of materials that can be bought
   - Students not accustomed to individualized instruction may resist and ask for the "old" approach; parents may also resist

   Potential difficulties due to differences among teachers might include the following:

   - Abilities to handle differences will differ among teachers.
   - "Old timers" may resist attempts to team-teach or to individualize instruction.
   - Disagreements may occur due to divisions among teachers.

- Students will probably flock to the better teachers.
- Everyone may blame you for the problems that exist.

2. Approaches to individual differences might include the following:
   - Selective enrollment
   - Homogeneous grouping
   - Nongraded classes
   - Non-promotion/acceleration
   - Informal variations in teaching methods
   - Remedial instruction
   - Team approaches
   - Self-instructional materials
   - Individualized instruction

3. Following is an example of an organizational plan that addresses individual differences: Team non-English speakers with native speakers; try to issue some directions in the non-English speakers' native language; pair physically handicapped students with nonhandicapped students if their handicap is one that interferes with learning; develop self-study modules for the course; let students progress at their own rates; lecture very little--provide many projects in which students can help each other; include field trips; let various students lead the activities; eliminate any architectural barriers that exist in the classroom.

Group Activity Responses

1. These are sample answers to the discussion topics:

   a. Students were screened before entering; the use of self-study modules has allowed individuals to work at their own speed; small-group discussions have allowed for expression of individual ideas.

   b. Yes: I am an independent worker; I like to do the course work in my own home.

No: I need more structure; there was too much content in the modules; there wasn't enough content in the modules; I prefer to do course work in a group setting.

c. Use a pretest to see what a student already knows and then allow him or her to skip course activities addressing those concepts; use study teams or study pairs to discuss the instructional material.

Self-Check

GOAL 1

1. What four major types of growth and development are common to all individuals?

2. Name two developmental tasks for each age group:

   - Adolescents
   - Adults

3. List 10 areas of potential differences among learners.

4. State five ways that adult learners can differ from adolescent learners.

GOAL 2

1. What are three reasons for studying individual learners?

2. List five methods of gathering information about individual learners. State one advantage and one disadvantage for each of the methods.

GOAL 3

1. What are two perspectives that must be considered in comprehensive program planning?

2. Briefly describe three strategies that are being used to deal with individual differences within vocational programs.

Self-Check Responses

The answers that follow will give you an idea of the type of response expected. Use them as a study tool if you wish.

GOAL 1

1. Four major types of growth and development common to all individuals are:

   - physical,
   - mental (intellectual),
   - emotional, and
   - social.

2. Consider your answer correct if it includes any two developmental tasks from each group listed below.

   - Adolescents: achieving emotional independence from parents and other adults; relating to members of the opposite sex; acquiring a set of values as a guide to behavior.
   - Adults: establishing and maintaining a home; finding work; raising children; adjusting to declining physical abilities.

3. Consider your answer correct if it includes any ten of the following areas of potential differences among learners.

   - Age
   - Sex
   - Abilities (physical and intellectual/mental)
   - Cultural background
   - Socioeconomic background
   - Educational background
   - Needs and desires
   - Motivation

- Attitudes and beliefs
- Interests
- Aptitudes
- Self-concepts
- Vocational maturity
- Learning style

4. Five ways that adult learners can differ from adolescent learners include:

   - voluntary rather than compulsory attendance;
   - types of expectations about school, instructors, and themselves;
   - self-concept;
   - breadth of experience; and
   - presence of rigid habits and ways of doing things.

GOAL 2

1. Consider your answer correct if it includes any three of the following reasons for studying individual learners.

   - Planning instruction to meet individual needs
   - Identifying potential learning problems before they become more serious
   - Showing personal interest in the learner
   - Learning more about yourself
   - Gaining knowledge of differential psychology

2. Five methods of gathering information about individual learners include:

   - books, articles, films;
   - cumulative records;

- interviews/conferences;
- ratings/checklists; and
- tests.

(See the response to Individual Study Activity #1, GOAL 2, for the advantages and disadvantages of each method.)

GOAL 3

1. Two perspectives that must be considered in comprehensive program planning are listed below.

   - Program content per se and the instructional process (this perspective comprises a body of knowledge and a number of techniques for transmitting that knowledge)
   - The student's characteristics and goals (this perspective indicates the content to be addressed by a particular student as well as the most effective method of instruction for that student).

2. Consider your answer correct if it includes any three of the following strategies for dealing with individual differences within vocational programs.

   - Selective enrollment to eliminate those who do not meet the criteria for the course
   - Homogeneous grouping, based on such differences as intellectual ability or previous experience; attempts to minimize differences among students in a particular learning setting
   - Informal variations in teaching methods is an attempt by virtually all teachers to reward or offer options and projects to students
   - Remedial instruction to attempt to remove individual differences by correcting learning problems
   - Team approaches, which involve building teams around student abilities (e.g., pairing skilled readers with non-readers) as well as around differences among teachers (having instructors team teach classes)

- Self-instructional materials, such as programmed books, computers, and teaching machines, to allow students to work at their own pace. These approaches are attempts to meet differences in learning style as well as differences in time requirements for learning

Recommended References

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VECS Module Titles

Module 1: Vocational Educators and Curriculum Management

Module 2: The Scope of Vocational Education

Module 3: Organization of Vocational Education

Module 4: Legislative Mandates for Vocational Education

Module 5: Priorities in Vocational Education

Module 6: Vocational Education for Students with Special Needs

Module 7: Vocational Needs Assessment and Curriculum Development

Module 8: Conducting Task Analyses and Developing Instructional Objectives

Module 9: Selecting Instructional Strategies and Assessing Student Achievement

Module 10: Relating Learning Differences and Instructional Methods

Module 11: Selecting and Preparing Instructional Materials

Module 12: Evaluating Vocational Education Curricula

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